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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 09/894,392
Filing Date: June 28, 2001
Appellant(s): HORVITZ, ERIC J.

Amin & Turocy, LLP
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 14 October 2004.

(1)   Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2)   Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly

affect or be directly affected by or have a bearing on the decision in the pending appeal

is contained in the brief.

(3)   Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4)   Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection

contained in the brief is correct.

(5)   Summary of Invention

The summary of invention contained in the brief is correct.

(6)   Issues

The appellant's statement of the issues in the brief is correct.

(7)   *Grouping of Claims*

The rejection of claims 1-8 and 10-45 stand or fall together because appellant's

brief does not include a statement that this grouping of claims does not stand or fall

together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8)   *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9)   *Prior Art of Record*

5,193,171   SHINMURA ET AL.   03-1993

6,199,103   SAKAGUCHI ET AL.   03-2001

Horvitz, Eric. "Continual Computation Policies for Utility-Directed Prefetching" Procs. of

the Seventh International Conference on Information and Knowledge Management, pp.

175-184. 11-1998. ACM Press.

(10)   *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated

by U.S. Patent No. 5,193,171 to Shinmura et al.

Referring to claim 1, Shinmura discloses a system that facilitates maintaining an item as claimed.

See Figures 1-4 and the corresponding portions of Shinmura's specification for this disclosure. In

particular, Shinmura teaches "a system [See Fig. 1] that facilitates maintaining an item [file], comprising:

a first data store [9] that stores the item in an active state;

a second data store [10] that stores the item in an archived state; and

an inference system [1] that inferentially determines [See Figs. 3-4] whether to store the item in an active or archived state based at least in part upon information related to [See discussion of Step 47 (column 6, lines 34-47)] at least one of: a property of the item [size], a property of a user [user designation as archive file] and extrinsic data [least recently used]" as claimed.

Referring to claim 2, Shinmura discloses a system that facilitates maintaining an item as claimed. See Figures 1-2 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 1, as above, "further comprising: a property log [management catalogue 11] that stores as evidence at least one of: information related to a property of the item [size], a property of a user and extrinsic data [See above], the inference system consults the property log when making an inferential determination [See discussion of Step 47]" as claimed.

Referring to claim 3, Shinmura discloses a system that facilitates maintaining an item as claimed. See Figures 3-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 2, as above, "the inference system further basing determinations upon a probability of user access [choosing a file that has not been used or is least recently used (oldest referenced) {See column 6, lines 37-43}] to the item" as claimed.

Claim 11 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 12 is rejected on the same basis as claim 3, in light of the basis for claim 11. See the discussions regarding claims 1-3 and 11 above for the details of this disclosure.

Referring to claim 13, Shinmura discloses the utility based item archiving system as claimed. See Figures 3-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura teaches the system of claim 12, as above, being temporally sensitive such that a determined utility of an item and storage inferences drawn therefrom [archive/recall processing] are continually updated over time [every time active storage space runs out or a file is added that is larger than the available active space] as claimed.

Claims 1-4 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated

by U.S. Patent No. 6,199,103 to Sakaguchi et al.

Referring to claim 1, Sakaguchi discloses a system that facilitates maintaining an item as

claimed. See Figures 1-5 and the corresponding portions of Sakaguchi's specification for this disclosure.

In particular, Sakaguchi teaches "a system that facilitates maintaining an item, comprising:

a first data store [5] that stores the item in an active state;

a second data store [6] that stores the item in an archived state; and

an inference system [2] that inferentially determines whether to store the item in an active or

archived state based at least in part upon information [3] related to at least one of: a property of the item,

a property of a user and extrinsic data" as claimed.

Referring to claim 2, Sakaguchi discloses the system that facilitates maintaining an item as

claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure.

Sakaguchi teaches the system of claim 1, as above, "further comprising: a property log [3] that stores as

evidence at least one of: information related to a property of the item, a property of a user and extrinsic

data, the inference system consults [Loop for each condition between ST1 and ST2] the property log

when making an inferential determination" as claimed.

Referring to claim 3, Sakaguchi discloses the system that facilitates maintaining an item as

claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure.

Sakaguchi teaches the system of claim 2, as above, the inference system further basing determinations

upon a probability of user access [junk degree (or non-junk degree)] as claimed.

Referring to claim 4, Sakaguchi discloses the system that facilitates maintaining an item as

claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure.

Sakaguchi teaches the system of claim 3, as above, "wherein at least one of: a property of the item, a

property of a user and extrinsic data undergo probabilistic computations [step ST2] to ascertain a

probability of user access" as claimed.

Claim 11 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 12 is rejected on the same basis as claim 3, in light of the basis for claim 11. See the discussions regarding claims 1-3 and 11 above for the details of this disclosure.

Referring to claim 13, Sakaguchi discloses the utility based archiving system as claimed. See Figures 1-3 and the corresponding portions of the specification for this disclosure. Sakaguchi teaches the system of claim 12, as above, being temporally sensitive [through learning section (7)] such that a determined utility of an item [junk (or non-junk) degree] and storage inferences drawn therefrom are continually updated over time as claimed.

Claims 4-6, 14-21, 23-28, 30-37 and 39-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmura in view of the article entitled "Continual Computation Policies for Utility-Directed Prefetching" by Horvitz (hereinafter 'Horvitz').

Referring to claim 4, Shinmura's system does not explicitly perform "probabilistic computations to ascertain a probability of user access" as claimed. That is, Shinmura's probability of user access is not necessarily calculated by "probabilistic computations", but is instead determined by past user accesses. Specifically, a file that has not been accessed by a particular user, or a file that is least recently accessed out of all of a user's files, has the lowest probability of user access in Shinmura's determination.

Horvitz discloses a system and method similar to that of Shinmura, wherein archived files are pre-fetched into active storage if they have a high probability of user access, but kept in archive storage if they have a low probability of user access. Specifically, Horvitz teaches performing probabilistic computations on a property of the item, a property of a user or extrinsic data to ascertain a probability of user access to the item as claimed. See section 3, pages 179-181, for the details of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Horvitz' probabilistic computations in Shinmura's system to determine the probability of user access to a specific item as a basis for determination to archive the item or keep it active. One would

have been motivated to do so in order to provide a more accurate, yet cost-effective means for

determining probability of user access, instead of a simple choice of a non/least accessed item.

Referring to claims 5 and 6, the system and method of Shinmura in view of Horvitz as applied to

claim 4 above discloses the invention as claimed. Shinmura does not explicitly state that the inference

system bases archive/migrate determinations upon a value density of the item as claimed. However,

Shinmura's (as modified by Horvitz) determinations are based on both a probability of user access (See

above) to an item and the size of the item (See Shinmura's description of Step 47), which are the sole

constituents of applicant's claimed "value density". Therefore, Shinmura provides direct suggestion for

basing archive determinations upon a value density of the item as claimed.

Horvitz further teaches basing determinations upon a value density of the item as claimed. See

sections 2.4-2.5 on page 179 for the details of this disclosure. Specifically, Horvitz' decision to migrate an

item is based on the flux of the item, Ψ(segment), which is the value density of an item, as claimed, given

a constant transmission rate (R) and a Value(Component) of 1.0 for a full file ['the maximal content for the

document' (See lines 2-9 of the second column on page 179)]. That is, Horvitz' equation of Section 2.5

can be reduced such that the flux [Ψ(segment)] divided by the transmission rate [R] = value density = the

probability of user access given evidence [p(D|E)] divided by the size of the item [Size(Component)] as

claimed in claim 6, where Value(Component) = 1.0 for a full file migration and the transmission rate (R) is

constant (and thus factored out).

In using Horvitz' probabilistic computations in the system and method of Shinmura as above, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to

implement Horvitz' calculation of a value density in Shinmura's (as modified by Horvitz) system as a basis

for determination to archive the item or keep it active. One would have been motivated to do so because

of the direct suggestion provided by Shinmura, as above, in view of Shinmura's silence on the detailed

calculations used in decision step 47.

Claims 14-15 are rejected on the same basis as claims 5-6, in light of the basis for claim 13

above. See the discussions regarding claims 1-6 and 11-13 above for the details of this disclosure.

Referring to claims 16-17, the system and method of Shinmura in view of Horvitz as applied to claim 15 above discloses the invention as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification for this disclosure. Shinmura's (as modified by Horvitz) system employs a knapsack packing analysis [Space Allocation Processing] to determine how to store the item by considering respective value densities of items [See above] to determine which items to store as active and which items to archive [archive/recall processing] as claimed.

Claim 18 is rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claim 19 is rejected on the same basis as claim 13, in light of the basis for claim 18 above. See the discussions regarding claims 13 and 18 for the details of this disclosure.

Claim 20 is rejected on the same basis as claim 16, in light of the basis for claim 19. See the discussions regarding claims 16 and 19 for the details of this disclosure.

Claim 21 is rejected on the same basis as claim 5. See the discussions regarding claims 1-5 for the details of this disclosure.

Claim 23 is rejected on the same basis as claim 18. See the discussion regarding claim 18 above for the details of this disclosure.

Claims 24-26 are rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claims 27-28 are rejected on the same basis as claim 13, in light of the basis for claim 26. See the discussions regarding claims 13 and 26 above for the details of this disclosure.

Referring to claim 30, the system and method of Shinmura in view of Horvitz as applied to claim 24 above discloses the invention as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification, as well as sections 2.4-2.5 of Horvitz' article for this disclosure. The system of Shinmura in view of Horvitz further comprises an interactive user interface [14] as claimed.

Referring to claims 31-32, the system and method of Shinmura in view of Horvitz as applied to claim 30 above discloses the invention as claimed. The UI of Shinmura in view of Horvitz includes a selection element operative to allow a condition to be enabled/disabled and an entry element operative to

allow a condition to be configured as claimed. See Shinmura's discussion of Steps 40-48 as well as section 2.5 of Horvitz' article for the details of this disclosure.

Claims 33-35 are rejected on the same basis as claim 16. See the discussions regarding claims 1-5 and 16 above for the details of this disclosure.

Claims 36-37 are rejected on the same basis as claim 13, in light of the basis for claim 35. See the discussions regarding claims 13 and 35 above for the details of this disclosure.

Claims 39-41 are rejected on the same basis as claim 16. See the discussions regarding claims 1-5 and 16 above for the details of this disclosure.

Claims 42-44 are rejected on the same basis as claim 5. See the discussions regarding claims 1-5 above for the details of this disclosure.

Claim 45 is rejected on the same basis as claim 32. See the discussions regarding claims 30-32 above for the details of this disclosure.

Claims 7-8, 10, 22, 29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmura in view of Horvitz as applied to claim 6 above, and further in view of Sakaguchi et al.

Referring to claim 7, Shinmura's (as modified by Horvitz) inference system does not explicitly determine whether the item should be regarded as a one-shot item as claimed. However, Shinmura's (as modified by Horvitz) system does detect items that have been accessed once but not accessed again after that. See the description of steps 46-48 in Shinmura's specification for this disclosure. This provides suggestion for detection of one-shot items for earlier archival so less active memory space is used.

Sakaguchi, as shown above, discloses a system and method similar to that of Shinmura. Sakaguchi further teaches an inference system [2] operable to determine whether an item should be regarded as a one-shot item [junk mail] based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and value density [See discussion of element 3] as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Sakaguchi's junk mail detection processing to the system of Shinmura in view of Horvitz so as to determine whether an item should be regarded as a one-shot item, to obtain the invention as claimed. One would have been motivated to do so in the interest of archiving one-shot items immediately after access so they do not use active storage space necessary for other, more important files. Further motivation for the combination comes from Shinmura's suggestion, as provided above.

Referring to claim 8, the system and method of Shinmura in view of Horvitz and Sakaguchi as applied to claim 7 above discloses the invention as claimed. See Figure 1 and the corresponding portion of Sakaguchi's specification, as well as Figures 1-3 and the corresponding portions of Shinmura's specification for this disclosure. Sakaguchi's one-shot item processing as added to the system of Shinmura in view of Horvitz teaches the system of claim 7, as above, operable to store a one-shot item [junk mail] in an archived state [See steps 2, 4 and 6] after it is accessed [See step 1] as claimed.

Referring to claim 10, the system and method of Shinmura in view of Horvitz and Sakaguchi as applied to claim 7 above discloses the invention as claimed. See Figures 1-5 and the corresponding portions of Sakaguchi's specification for this disclosure. Sakaguchi's one-shot item processing, as added to the system of Shinmura in view of Horvitz, further comprises a learning system [7] that acts upon the inference system [2] and modifies inferences made thereby based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and a value density [See Fig. 3] as claimed.

Claim 22 is rejected on the same basis as claim 8, in light of the basis for claim 21 above. See the discussions regarding claims 7-8 and 21 for the details of this disclosure.

Claim 29 is rejected on the same basis as claim 10, in light of the basis for claim 28 above. See the discussions regarding claims 7, 10 and 28 for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 10, in light of the basis for claim 37 above. See the discussions regarding claims 7, 10 and 37 for the details of this disclosure.

(11) ***Response to Argument***

A. Rejection of Claims 1-3 and 11-13 under 35 U.S.C. §102(b) - Shinmura.

Appellant's First Argument:

Appellant argues that Shinmura does not disclose an inference system that

inferentially determines whether to store an item in an active or archived state with

respect to claims 1-3, or a means for inferring with respect to claims 11-13.

Examiner's First Response:

Appellant has failed to rebut the *prima facie* case of anticipation. Appellant's

arguments rely on limitations that are not recited in the rejected claims. These

limitations include a cost-benefit analysis, calculation of a value density, machine

learning, probabilistic computation, etc. However, these limitations have not been, and

should not be, read into claims 1-3 and 11-13 for at least the following reasons: 1.

These limitations are recited in various other claims (e.g. dependent claims 4-8 & 10)

and have been addressed by the Section 103 rejections of those claims. On page 9 of

the Brief, Appellant incorrectly states that "Subsequently in the Final Office Action, the

Examiner concedes that Shinmura *et al.* fails to disclose *inferring* whether an item is a

candidate for archiving," citing the Final Office Action at p. 6. However, this section of

the Final Office Action is directed to the Section 103 rejection of **claim 4**. The

Examiner's statements therein do not in any way constitute a concession regarding

"inference." 2. The instant specification does not explicitly or implicitly require that the

"inference system" of claims 1-3 or the "means for inferring" of claims 11-13 include

these limitations. Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988

F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The issue at hand is whether Shinmura's data processing device [1] is an

"**inference** system that **inferentially determines** whether to store the item in an active

or archived state" as claimed (Claim 1, emphasis added). Thus, the definition of the

term "inference" is the pivotal consideration. During patent examination, the pending ·

claims must be given their broadest reasonable interpretation consistent with the

specification[1] as required by MPEP § 2111. This means that the terms of a claim must

be given their "plain meaning" unless a clear definition has been provided in the

specification[2] as per MPEP § 2111.01.

In the instant case, the specification does not provide a clear and explicit

definition of "inference" by which the claims are to be limited. In fact, the systems and

methods described in the specification are done so largely by way of example, with

clear and explicit contemplation of other "means for inferring." (See specification at

page 6, lines 1-8 and page 21, line 31 – page 22, line 6) Furthermore, Appellant's

arguments even define the "inference system" by way of example on pages 6-7 of

Appellant's Brief: "The inferences **may** be based **in part** upon a cost-benefit

analysis....The systems **may** account for temporal changes, **for example**, by

continuously updating value densities and probabilities" (emphasis added) This further

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[1] See *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).
[2] See *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); and *In re Vogel*, 422 F.2d 438, 441, 164 USPQ 619, 622 (CCPA 1970).

evinces that the limitations being argued by Appellants (as described above) should not be read into claims 1-3 and 11-13.

Due to the lack of clear, explicit definition in the specification, the examiner is left to accord the term "inference" with the broadest reasonable definition to comply with the rules set forth above. Merriam Webster's Collegiate Dictionary, Tenth Edition, provides a first definition of "infer" as "To derive as a conclusion from facts or premises." The question then becomes whether this definition is a "reasonable" one. The answer is invariably yes because this definition is consistent with both the specification and the knowledge generally available to one of ordinary skill in the art. The examiner maintains that Shinmura's determination (whether to store the item in an active or archived state) is "inferential" because it is a conclusion [which file(s) to archive vs. which file(s) to keep active] drawn from facts [e.g. recorded usage of the file] as required by the definition of inference. Furthermore, absent specific instructions from a user to store an item as active vs. inactive, Shinmura's system has no way of knowing the user's intentions or reading the user's mind, and is therefore "inferring" what the user desires based on its computations. Therefore, Shimura does disclose the claimed "inference system" and "means for inferring" in claims 1-3 and 11-13.

B.   Rejection of Claims 1-4 and 11-13 under 35 U.S.C. §102(e) - Sakaguchi.
Appellant's Second Argument:

Appellant argues that Sakaguchi does not disclose a data store adapted to store the item in an archived state or an inference system that inferentially determines

whether to store an item in an active or archived state with respect to claims 1-3, or a

means for inferring with respect to claims 11-13.

Examiner's Second Response:

Appellant's arguments with regard to the term "inference" are substantially the

same as those set forth with regard to the Shinmura reference in Appellant's First

Argument above. The examiner's reasoning found in the Examiner's First Response

above, herein incorporated by reference, is applicable to, and addresses this argument

in its entirety.

Appellant's arguments with regard to Sakaguchi's teaching of an archive are

contradictory. On page 11 of the Brief, Appellant admits that Sakaguchi isolates a user

from being exposed to junk mail by placing the incoming email in a junk mail folder

[Estimated Junk Electronic Mail Storage Section (6)]. Appellant also states that, "As

described in the subject patent application, an item is in an active state if the user has

quicker and easier access to the item *relative* to the **archived** state." Subsequently,

Appellant states that, "In the system of Sakaguchi *et al.*, ... the item is simply moved to a

junk mail folder (which means that the user can access the item *just as easily and as*

quickly as email in the non-junk mail folder)." However, this last assertion has no basis

in Sakaguchi's disclosure, and contradicts Appellant's first admission, that the user is

isolated from the junk mail by placing it in the junk mail folder. Namely, to obtain

messages in the junk mail storage [6], a user of Sakaguchi's system must take extra

steps to access those messages relative to messages stored in the non-junk mail folder,

else the user is not isolated from the junk mail at all. This is clearly in accordance with

Appellant's definition of archiving. Therefore, Sakaguchi does disclose a data store adapted to store the item in an archived state, in conjunction with all other limitations of claims 1-4 and 11-13.

C. Rejection of Claims 4-6, 14-21, 23-28, 30-37 and 39-45 under 35 U.S.C. §103(a) – Shinmura in view of Horvitz.

Appellant's Third Argument:

Appellant argues that there is no teaching, suggestion, or motivation to combine Shinmura *et al.* with Horvitz because the Examiner has not provided any evidence in the prior art or other reference of record to show otherwise, and has used the teaching of applicant's specification as a hindsight-based roadmap to achieve the purported combination.

Examiner's Third Response:

In response to Appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to Appellant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, motivation to combine comes from both the references themselves and the knowledge generally available to one of ordinary skill in the art, as will be elaborated below.

First, Appellant's assertions that Horvitz is unrelated to archiving have no basis in logic whatsoever. Horvitz is directed to prefetching of web pages [files] as readily admitted by Appellant. Prefetching is a process that directly mirrors archiving. In prefetching (as described in Horvitz), files that are likely to be accessed by a user in the near future are 'fetched' from a remote storage to a local storage that is more readily and quickly accessible to the user. In archiving (as described in Shinmura), files that are less likely to be accessed by a user in the near future are migrated from readily accessible local storage to a less accessible remote storage (archive) to make room for files that are more likely to be accessed by a user in the near future. One of ordinary skill in the art at the time the invention was made would certainly recognize this mirror, and the similarities between the processes of Shinmura and Horvitz, given both disclosures. Further, this person of ordinary skill in the art would recognize the advantages of Horvitz' probabilistic computations, to gauge likelihood of user access to

a file, over those disclosed in Shinmura. Therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to add Horvitz' probabilistic computations to Shinmura's system because of the greater accuracy and effectiveness these computations would provide to Shinmura's system.

D.   Rejection of Claims 7-8, 10, 22, 29 and 38 under 35 U.S.C. §103(a) – Shinmura in view of Horvitz and Sakaguchi.

Appellant's Fourth Argument:

Appellant argues that there is no teaching, suggestion, or motivation to combine Shinmura et al. with Horvitz, repeating Appellant's Third Argument above, and further argues that Sakaguchi et al. does not disclose determining if an item is a one-shot item, repeating arguments directed to the term "inference" in Appellant's First Argument and Appellant's Second Argument above.

Examiner's Fourth Response:

The examiner's reasoning found in the Examiner's First Response, the Examiner's Second Response, and the Examiner's Third Response above, herein incorporated by reference, is applicable to, and addresses this argument in its entirety.

For the above reasons, it is believed that the rejections should be sustained.

An appeal conference was held on 31 March 2005 with the below listed conferees.
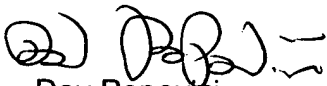
Respectfully submitted,

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01 April 2005

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